The **Westwide Pine Beetle Model (WWPB) is a multi-stand Forest Vegetation Simulator (FVS) application that simulates pine bark beetle outbreaks over time and space, interacting with stand growth and treatment settings. Its generic structure allows different beetle species and their hosts to be simulated. Output can be directed to data visualization applications, such as the Stand Visualization System (SVS).**

Focusing on the Landscape

Pine bark beetles have widespread occurrence and high potential to produce extensive tree mortality. Because of this, substantial efforts to model pine beetle-forest condition interactions have been made over many years. Recent availability of geographic information system (GIS) data and software has made it possible for the WWPB model to integrate a stand structure approach with a landscape beetle population approach.

Many aspects of beetle dynamics and stand interactions are not understood, and the WWPB model simplifies much of what is known. However, this model allows a consistent means to project potential outbreak scenarios now, and can be improved with additional testing and use. This product has been a collaborative effort involving many field and research entomologists, modelers, and others from the Forest Service and other organizations.
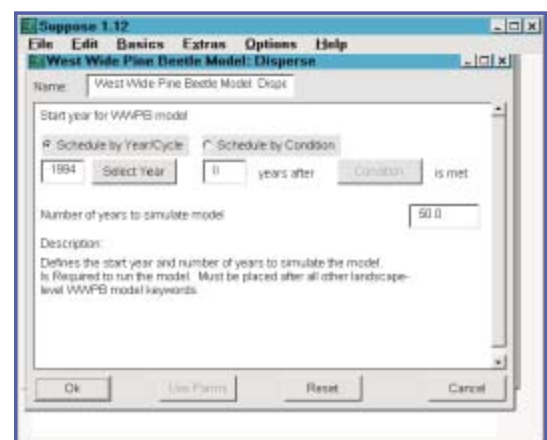
Model Components

FVS components:
- Base FVS growth model
- Base FVS management options
- Parallel Processor Extension (PPE)

WWPB components:
- Within-stand stress factors
- Management treatments
- Movement of beetle outbreaks between stands
- Between-year beetle outbreak dynamics
- Stand structure and beetle interaction
- Input and output routines and interfaces

WWPB uses the FVS-Suppose Interface

Modeling at Large Scales

The WWPB model's multi-stand approach allows beetle outbreak impacts and treatment effects to be modeled over areas in a means more consistent with actual beetle outbreaks. Data availability and natural variation will always limit the ability to predict precisely where and when impacts may occur; however, the landscape approach used by the WWPB model allows insight into the types of areas likely to be affected, the interaction of forest conditions with the course of outbreaks, and the influence of stand treatments on landscape outbreak impacts.

The model is designed for silviculturists, planners, and forest health specialists to test and display outbreak and management scenarios for specific or representative forest landscapes, such as needed for watershed analyses, wildlife habitat studies, or landscape disturbance analyses.

WWPB/FVS Output Capabilities

- Preformatted stand and landscape tables
- Spreadsheet-compatible files
- Arc-compatible stand level files
- FVS Stand Visualization System (SVS) graphics
- SmartForest and Envision landscape visualization graphics

WWPB output displayed with Arc View GIS
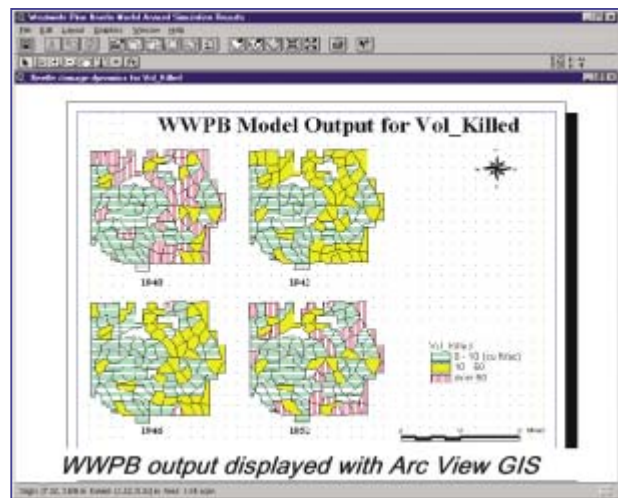
How to Get the Program

The WWPB model joins other FVS insect and disease impact model extensions. Source code and a test data set are available for downloading from:

http://www.fs.fed.us/foresthealth/technology/programs/models/wwpb.shtml

The FVS site, where FVS software and documentation downloads may be found, is at:

http://www.fs.fed.us/fmsc/fvs

As of January of 2003, WWPB model executables are available for Central Rockies, Northern Idaho, and South-Central Oregon/Northeast California variants of FVS. Other variants will be linked upon request. WWPB model documentation is available from FHTET. Additional documents related to the model, including a report testing its use on a lodgepole pine landscape in central Colorado, are in preparation: they will be posted on the website as they are completed.

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